To: Vann, Bradley[Vann.Bradley@epa.gov]
From: Washburn, Ben
Sent: Fri 2/12/2016 6:02:18 PM
Subject: RE: West Lake Article

Ex. 5 - Deliberative

Benjamin M. Washburn
Public Affairs Specialist
EPA Region 7
(913) 551-7364

-----Original Message-----
From: Vann, Bradley
Sent: Friday, February 12, 2016 11:40 AM
To: Washburn, Ben <washburn.ben@epa.gov>
Subject: RE: West Lake Article

Ex. 5 - Deliberative

Bradley Vann - Remedial Project Manager
U.S. Environmental Protection Agency
Superfund Division
Missouri/Kansas Remedial Branch
11201 Renner Blvd.
Lenexa, KS 66219
Phone: 913-551-7611
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-----Original Message-----
From: Washburn, Ben
Sent: Friday, February 12, 2016 11:10 AM
To: Kiefer, Robyn V NWK <Robyn.V.Kiefer@usace.army.mil>; Vann, Bradley <Vann.Bradley@epa.gov>
Subject: RE: West Lake Article

Thanks for passing that along, Robyn.

Benjamin M. Washburn
Public Affairs Specialist
EPA Region 7
(913) 551-7364

-----Original Message-----
From: Kiefer, Robyn V NWK [mailto:Robyn.V.Kiefer@usace.army.mil]
Sent: Friday, February 12, 2016 11:07 AM
To: Washburn, Ben <washburn.ben@epa.gov>; Vann, Bradley <Vann.Bradley@epa.gov>
Subject: FW: West Lake Article

Another West Lake Article. Wasn't sure if you had seen this.

-----Original Message-----
From: Kolarik, David S NWK
Sent: Friday, February 12, 2016 8:29 AM
To: Young, Scott E NWK <Scott.E.Young@usace.army.mil>; Fraley, Jill K NWK

<Jill.K.Fraley@usace.army.mil>; Kiefer, Robyn V NWK <Robyn.V.Kiefer@usace.army.mil>; Leibbert, Jason M NWK <Jason.M.Leibbert@usace.army.mil>; Lyle, Mary B NWK <Mary.B.Lyle@usace.army.mil>
Cc: Dorsey, Trisha C NWK <Trisha.C.Dorsey@usace.army.mil>
Subject: West Lake Article

West Lake story: An underground fire, radioactive waste, and governmental failure
http://thebulletin.org/west-lake-story-underground-fire-radioactive-waste-and-governmental-failure9160
Bulletin of the Atomic Scientists - Hopedale, IL - 2/11/16
St. Louis District, Mississippi Valley Division

By Robert Alvarez

On July 16, 1973, 28 years to the day after the first nuclear weapon was exploded at Alamogordo, New Mexico, a line of dump trucks containing the detritus from the uranium used to make plutonium for the test bomb showed up at the West Lake landfill in Bridgeton, Missouri. Assuming the trucks were loaded with clean fill, the landfill superintendent waved them through without charging a dumping fee. A truck driver said later that he and others used the black stuff in their home gardens. By October several thousand shipments were illegally dumped at the landfill in north St. Louis County, in violation of federal standards; they contained an estimated 43,000 tons of radioactive uranium processing wastes and contaminated soil.

Now under the national news media spotlight, a landfill adjoined to the West Lake dump has experienced a growing underground fire for the past five years. The fire is estimated to be about 1,000 feet from the radioactive material. Consultants for Missouri Attorney General Kris Koster indicated in November 2015 that, in the worst case, the fire could reach the radioactive material in a matter of a few months. An official for the Republic Corporation, which owns the landfill, contends the fire is moving away from the wastes.

If the fire reaches the radioactive wastes, the St. Louis County emergency plan warns, there is the "potential for radioactive fallout to be released in the smoke plume and spread throughout the region."

Emergency responders in the neighboring state of Illinois are being warned to prepare to deal with potentially contaminated evacuees. Children in four school districts near the landfill have brought letters home advising parents that children would either be evacuated or sheltered in place, should the fire reach the radioactive wastes.

After denying the fire would reach the radioactive material for the past two years, in December the US Environmental Protection Agency (EPA) ordered the installation of an underground protective barrier, but provided few details. "We are now working through the highly complex details of implementing our decision and the associated legal steps. Once the plan is finalized, we are committed to providing this information to the public," a mid-December press release said. "EPA will use all available enforcement authorities to ensure implementation of this work."

The underground barrier is not enough. In the first place, these wastes, which will become increasingly more radioactive for at least 1,000 years, should have never been dumped without regard to federal law and then allowed to sit there for more than four decades. The landfill fire, first detected in 2010, underscores a systematic failure by the US nuclear weapons program, the Nuclear Regulatory Commission and the Environmental Protection Agency to correct this transgression. If these wastes were sitting on the Energy Department's Hanford site in Washington state-which is also close to significant numbers of people and a major drinking water supply-their removal, isolation, and disposal would be high priorities. But unlike Hanford, where there is an enforceable environmental compliance agreement with the Energy Department, the West Lake problem was allowed to slip, by default, through the bureaucratic cracks, contaminating the environment for decades while the government did little or nothing.

A change in federal law recently passed by the US Senate authorizes the Army Corps of Engineers to manage the disposition of radioactive wastes in the landfill, a promising start toward solving this problem.

In the end, the responsibility for the removal of these wastes rests with the federal government, which was responsible for their generation, and for gross negligence and mismanagement in disposing of them.

The spread of contamination. The disposal of nuclear waste in the West Lake municipal landfill represents a cardinal violation of federal legal requirements for licensed radioactive waste disposal sites; as a result, tens of thousands of tons of nuclear waste now lie in a densely populated area, on a floodplain approximately 1.2 miles from the Missouri River, with no engineered barriers to prevent seepage of radioactivity into the water table or the river.

Beginning in 1942, the wastes were generated at the Mallinckrodt Chemical Works in downtown St. Louis. They came mostly from processing ore from the Shinkolobwe uranium mine in the Belgian Congo. Described as a "freak occurrence of nature" by a top official of the early US nuclear weapons program, the Congo mine yielded the highest concentrations of uranium of any mine found in the world since that time. About 70 percent of the uranium acquired by the Manhattan Project came from the Shinklobwe mine. Without the Congo ore, the first nuclear weapons would have likely not been ready to be used in 1945. After World War II, the mine provided about 80 percent of the uranium used in the US nuclear program well into the 1950s, enabling the United States to amass thousands of nuclear warheads.

The wastes sent to West Lake have most of the uranium removed from them, but they include concentrated radioactive decay products, some of which are tens of thousands of times more radioactive than the parent uranium. Because of they are so highly radioactive, the National Institute of Occupational Safety and Health found that the West Lake landfill holds the "worst" of the Mallinckrodt wastes.

The Mallinckrodt wastes don't just pose the potential danger of the spread of radioactivity by fire; chronic low-level exposure of nearby residents to radioactivity is also of concern. After two years of collecting and analyzing hundreds of soil and dust samples over a 75-square-mile area, my colleagues-environmental scientist Marco Kaltofen at Worchester Polytechnic Institute and researcher Lucas Hixson-and I recently reported in the Journal of Environmental Radioactivity that contamination from the wastes has likely migrated off site.

We found that the spread of contamination was consistent with releases of water and radon gas from the landfill. A clear indication of the spread of contamination from the site was one overriding fact: Nearly all the radioactive samples we gathered had distinctive characteristics of material processed at the Mallinckrodt Plant.

A mountain of radioactive waste. By 1946, the Mallinckrodt plant had run out of storage room and started trucking waste to land at the St. Louis airport, where it sat exposed to the elements for nearly two decades. By the late 1950's, a mountainous pile containing 133,000 tons of radioactive wastes had accumulated.

In the 1960s, researchers for the Atomic Energy Commission's Mound Laboratory near Dayton, Ohio determined that the waste residues sitting at the St. Louis airport contained the largest concentration of thorium 230 in the United States and possibly the world. Thorium 230 concentrations were found to be some 25,000 times greater than its natural isotopic abundance.

Over a half-life of 77,500 years, thorium 230 decays to radium-226 and undergoes a substantial "in-growth" of alpha radioactivity. In other words, the waste becomes increasingly "hotter." The US Nuclear Regulatory Commission calculated in 1982 that highly mobile radon gas generated from the in-growth of radium would increase fivefold in 100 years and nearly double that amount in 200 years. By 1959, experts at the Energy Department's Hanford site noted that thorium 230 is "in a class as hazardous as plutonium."

Because of agreements with Belgium going back to World War II, some of the wastes created at the Mallinckrodt plant belonged to the African Metals Company, a Belgian firm that owned the Congo mine where the uranium refined at Mallinckrodt originated; the Belgian company hoped to eventually extract radium and other metals from the waste. And so 1,157 tons of radium-bearing residues, known as the K-65 materials, were shipped in the late 1940s and early 1950s to a Fernald, Ohio uranium-processing plant

and the Ontario Ordinance Works in New York. There, they sat ignored in above-ground silos for decades, leaking large amounts of radon gas into the environment. At Fernald, then known as the Feed Materials Production Center, the wastes were stored in three red-and-white, checkerboard-painted silos, leading many people to believe the site was making animal feed. The US government eventually assumed ownership of the waste and disposed of it at a cost of some $460 million.

In March 1962, the U.S. Atomic Energy Commission (AEC) offered up approximately 125,000 tons of "uranium-thorium source materials" stored at the St. Louis airport site for sale. After being purchased by Contemporary Metals for at a little more than a dollar a ton, its subsidiary, Continental Mining and Milling Co., hauled the wastes from the airport between 1966 and 1967, through neighborhoods and on to the Latty Avenue property in Hazelwood, Missouri, where they were deposited directly on the ground. "The dirt would fall off the trucks," Skip Cothran, a forklift operator, told the St. Louis Dispatch in 1989. "There was waste all over Hazelwood and Latty (avenues). Sometimes if it rained, the stuff got so thick and sticky it looked like cow manure."

Children played with truck spills, "as if they were sifting for gold," recalls Carolyn Bower, a Post-Dispatch reporter who worked on stories about the Mallinckrodt waste. Some of the residues were dried and shipped to Canon City, Colorado for further processing by the Cotter Corporation, which purchased the wastes from Commercial Discount Corporation after it went bankrupt. In 1973, the remaining residues were removed from Latty Avenue and dumped into the West Lake landfill. Workers handling these materials were so highly exposed that they now are given the benefit of the doubt when they are considered for federal compensation for the cancers they have contracted.

Regulators kick the can down the road. In May 1974, AEC inspectors concluded that the wastes moved from the Hazelwood property were too radioactive to be dumped in the West Lake landfill and placing them there had violated federal disposal standards. But the AEC and its successor, the Nuclear Regulatory Commission, decided not to exercise their legal power to require the wastes to be retrieved and placed in suitable storage. Instead, the AEC let the Cotter company off the hook by terminating its license to possess the material.

For the next 20 years, the NRC considered West Lake to be among its most troublesome waste sites. After several studies, in 1988 the NRC staff issued a report on the landfill, declaring that the wastes there represented a significant long-term hazard and "will likely require moving the material to a carefully designed and constructed 'disposal cell.'" But the commission did not act, and in 1995 transferred responsibility for the West Lake site to the US Environmental Protection Agency's Superfund Program.

In 1989, the St. Louis Post Dispatch ran a lengthy series of articles detailing the radiological mess left behind by the Mallinckrodt plant and the widespread contamination from the wastes deposited in North St. Louis County. In response, pressure from the Missouri congressional delegation compelled the Energy Department to undertake a cleanup program that continues to this day, now under the auspices of the US Army Corps of Engineers. Numerous radioactive "hot spots" have been (and continue to be) found, especially along Cold Water Creek, which ran near the wastes as they sat at the airport and later in Hazelwood. But the single largest radioactive hazard posed by wastes from the Mallinckrodt plant-the hazard represented by the 43,000 tons of waste sitting in the West Lake landfill-remains conspicuous by its absence from the cleanup effort.

While the Corps of Engineers was cleaning up residual contamination, the EPA issued a decision in 2008 under its Superfund authority that allowed for "in-place" disposal of the radioactive waste at the West Lake landfill, supported by institutional controls, such as deed restrictions and fences, and the placement of a cap-made from clay, rocks and rubble from construction materials-over the radiation-contaminated areas.

This proposed response did not sit well with members of the EPA's National Remedy Review Board, created in 1996 to provide an independent assessment of Superfund cleanup decisions. In an unprecedented move, the EPA shrouded the review in secrecy and would not finalize it for public disclosure. But The Wall Street Journal reported that "board members had various concerns about the

proposal to leave the radioactive waste in place... West Lake was 'politically hot' and led to 'fireworks inside the agency,' said another person familiar with the matter, describing it as 'a nasty affair' involving 'unusual pressure' on the board from EPA officials."

And in 2000, the National Academy of Sciences, tasked to assess stewardship at nuclear weapons sites, concluded that "the likelihood that institutional management measures will fail at some point is relatively high... [M]uch of our current knowledge of the long-term behavior of wastes in environmental media may eventually be proven wrong."

Health problems arise. Concerns about the impacts of the wastes on the people in north St. Louis are growing.

Dawn Chapman, a community leader of the organization Just Moms, which is pushing for the removal of the wastes from the landfill, points out that "from the 1950's to 1970's there was a significant population boom in St. Louis County. With the population growth, there was a flurry of construction activity, building new subdivisions and supporting businesses. Construction grading disturbed the radioactive materials, effectively redistributing the contamination like icing on a cake."

A few years ago, Diane Whitmore Schanzenbach and Jannell Rodden Wright, who grew up near Cold Water Creek, became alarmed after discovering how many of their 1988 high-school class-mates were suffering from serious health problems, particularly rare cancers. In 2011, they conducted "door-step" epidemiology by creating a Facebook page designed to track diseases in neighborhoods where there was known contamination from the Mallinckrodt wastes.

No strangers to advanced statistical tools, within two years, Wright, an accountant, and Schanzenbach, an economics professor at Northwestern University, documented 700 cases of cancers and immune system diseases within a four-square-mile area. Some of these cancers have a one-in-a-million chance of occurring. In a 2014 epidemiological survey of residents living near Cold Water Creek, the Missouri Department of Health found statistically significant higher rates of leukemia and several other cancers known to be related to radiation exposure. Other potentially radiogenic cancers were found to be lower than expected. The authors cited "the lack of information on potential public exposures" as an important factor requiring further investigation. Wright and Schanzenbach updated their survey and reported in August 2015 that the number of diseases, including rare cancers, had increased to 2,725 cases. More recently, the US Centers for Disease Control has begun to visit the area, for another study

Fallout from Flint. On February 2, the US Senate passed legislation introduced by Missouri senators Claire McCaskill, a Democrat, and Roy Blunt, a Republican, transferring authority over the disposition of the radioactive wastes at the West Lake landfill from the EPA to the US Army Corps of Engineers. This is the latest development in the long-simmering dispute over handling of the West Lake waste situation. Many in the communities impacted by the wastes see the Senate bill as a vote of no confidence in the EPA. The legislation awaits action by the House of Representatives but has a good chance of being enacted. Blunt, a member of the Republican leadership and the Appropriations Committee, has considerable leverage, and given that the bill has solid bipartisan support, it seems unlikely to be opposed by the Obama Administration.

It's not far-fetched to conclude that there are parallels between the West Lake waste problem-created and exacerbated by decades of negligence and denial by the US nuclear weapons program and the agencies responsible for protecting people from its harmful legacy-and the disaster in Flint, Michigan, where citizens have been poisoned by lead-laced drinking water, and their public officials have been slow to respond. In fact, on January 27, the editorial board of the St. Louis Post Dispatch explicitly pointed out those parallels, concluding that "too often, people without power and clout don't count with government officials. A parallel situation exists here with Bridgeton's West Lake landfill... After seeing what happened in Flint, it comes as no surprise that they doubt government's will to find a permanent solution."

Responsibility for the radioactive legacy in north St. Louis County rests squarely on the US government, because the problem there was born of production of the first nuclear weapons. At minimum, the first

order of business should be for the Corps of Engineers to remove as much of the West Lake landfill wastes as possible and contain the rest, to protect nearby communities and the drinking water they draw from the Missouri River.

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